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22428	7590	08/23/2005	EXAMINER	
FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			HARRINGTON, ALICIA M	
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DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/816,933	Applicant(s) DYSON ET AL.	
	Examiner Alicia M. Harrington	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 49-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 49-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/8/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barone (US 6,700,055).

Regarding claim 1, Barone discloses a Fresnel lens (1; see col. 2, lines 40-65) comprising a substantially polygonal (rectangular shaped lens) focusing portion adapted to focus solar -radiation to a polygonal area (3; see figures 1 and 2). Barone fails to specifically disclose a square focusing portion to focus to a square area. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a square (as the polygonal shape) since, Barone suggest the lens array and solar cell size may be optimized for cost and efficiency (see col. 3, lines 63-67 and col. 4, lines 1-10), the lens and cell may be arrays (see col. 4, lines 50-57) of optical elements, and the square shaped elements also allow for close packing of the Fresnel lens and solar cells in a support structure (as also taught by Barone) to allow for a more efficient detection and focusing area. In addition, In *Gardner v. TEC Systems, Inc.*, 725

F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that,

where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

3. Claims 3 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barone (US 6,700,055) in view of Gorthala (US 6,299,317).

Regarding claims 3 and 49, Barone discloses a kit for forming a solar module, comprising: a Fresnel lens (1) comprising a substantially polygonal (rectangular shaped lens) focusing portion adapted to focus solar radiation to a polygonal area (3); and a first means (H; see figure 3 and col. 2, lines 40-50) for supporting a solar cell (3) at a predetermined distance from the Fresnel lens such that the solar radiation is focused onto the photovoltaic cell (see figures 1 and 2; col. 2, lines 40-55). However, Barone fails to specifically disclose using photovoltaic cell. Although, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a photovoltaic cell since they are well known for use in solar cells as efficient natural energy concentrators. However Barone fails to specifically disclose an embodiment of the solar concentrator in inside a building façade.

In the same field of endeavor, Gorthala teaches a Fresnel lens assembly for incorporation in a building façade to change thermal energy to electrical power (see col. 6, lines 11-67). Thus it would have been obvious to one of ordinary skill in the art at the

time the invention was made to include this feature since it is known in the art and provides proficient source for heating or lighting buildings.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barone (US 6,700,055) in view of Kaminar et al (US 6,020,554).

Regarding claim 2, Barone discloses the support/backing structure (H) can comprise a variety of support structures (see col. 2, lines 40-51; see figures 1-3). However, Barone fails to specifically disclose the Fresnel lens is a plastic injection molded lens which is adapted to be interlocked or snap fitted as claimed.

However, Kaminar discloses wherein the Fresnel lens comprises a plastic lens (see col. 3, lines 5-10) which is adapted to be interlocked or snap fitted (see col. 2, lines 20-27) onto a backing structure (15,16,18) adapted to support a photovoltaic cell (28; see col. 3, lines 10-60). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Barone, as taught by Kaminar, to provide an collector that is easily assembled without specialized tools. However, Barone and Kaminar fail to specifically disclose the lens is an injection-molded lens. Although, it would have been further obvious to one of ordinary skill in the art at the time the invention was made to use a plastic injection molded lens, since forming lens using injection molding processes is well known to plastic lenses, it can provide several lenses molded at the same time, and is known in the prior art to produce a quality plastic lenses.

5. Claims 4-20,50-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barone (US 6,700,055) in view of Gorthala (US 6,299,317), further in view of Kaminar et al (US 6,020,554).

Regarding claims 4, Barone discloses an housing where the back support (H) has a first cross sectional (top) area and second cross sectional (bottom) area, but Barone and Gorthala fail to disclose the second area is smaller than the first cross section area.

However, Kaminar discloses the kit of claim 3, wherein the first means comprises a back support structure which has a first cross sectional area (spreads larger at the top near lens) at a first portion adapted to be connected to the Fresnel lens and a second cross sectional area smaller than the first cross sectional area at a second portion adapted to support the photovoltaic cell (15,16, 28; see figure 1 and 2). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the support structure of Barone and Gorthala, as taught by Kaminar, to provide an collector that is easily assembled without specialized tools.

Regarding claim 5, Barone, Gorthala and Kaminar disclose the kit of claim 4. However, Barone fails to specifically disclose wherein the back support structure comprises a substantially pyramidal or a substantially conical support structure comprising a translucent, a diffusing or a Fresnel diverging material.

Kaminar further discloses a substantially pyramidal structure comprising a diffusing material (see col. 3, lines 30-35 and figure 2). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

the support structure of Barone and Gorthala, as taught by Kaminar, to provide an collector that is easily assembled without specialized tools.

Regarding claim 6, Barone, Gorthala and Kaminar disclose the kit of claim 4. However, Barone fails to specifically disclose wherein the back support structure comprises a diffusing material which is shaped to block the focused solar radiation from being visible from a back side of the back support structure, and wherein the back side of the back support structure faces away from the Fresnel lens.

Kaminar further discloses a substantially pyramidal back support structure comprising a diffusing material (see col. 3, lines 30-35 and figure 2) where the diffusing material is shaped to focus solar radiation and the sheets are metal. Thus, from the backside the solar radiation is not visible from the back support side. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the support structure of Barone and Gorthala, as taught by Kaminar, to provide a collector that receives a good concentration of solar energy and an collector that is easily assembled without specialized tools.

Regarding claim 7, Barone, Gorthala and Kaminar disclose the kit of claim 4. However, Barone fails to specifically disclose wherein the back support structure comprises a substantially pyramidal or a substantially conical support structure comprising a translucent, a diffusing or a Fresnel diverging material.

Kaminar further discloses a substantially pyramidal structure comprising a diffusing material (see col. 3, lines 30-35 and figure 2). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

the support structure of Barone and Gorthala, as taught by Kaminar, to provide an collector that is easily assembled without specialized tools.

Barone further teaches the support can be a scaffling structure. A scaffling structure would be an equivalent to wires or rods support structure. Furthermore, as taught by Kaminar, a snap fit structure, helps when assembling the housing. Thus, it would have still been obvious to one of ordinary skill in the art at the time the invention was made to provide a snap fit configuration, since the collector support would be easily assembled.

Regarding claim 8, Barone, Gorthala and Kaminar discloses the claimed invention except they fail to specifically disclose the kit of claim 4, wherein the Fresnel lens has an area of 0.2 meters square or less, the second area of the support structure comprises an area of 2 cm square or less, and a length of the support structure from the first area to the second area is 30 cm or less. It would have been an obvious matter of choice to design a Fresnel lens and support structure according the claimed dimensions, since such modification would have involved a mere change in size of the component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237(CCPA 1955).

Regarding claims 9 and 50, Barone discloses a solar module, comprising:
a Fresnel lens (1) comprising a substantially polygonal focusing portion adapted to focus solar radiation to a polygonal area; and a back support structure (H) adapted to support a solar cell (3) at a predetermined distance from the Fresnel lens such that solar radiation is focused onto the solar cell;

wherein: the back support structure has first portion (top region) connected to the Fresnel lens and a second portion adapted to support the solar cell (3; see figures 1 and 3 and col. 2); and the first portion (top) of the back support structure has a first cross sectional area and a second portion (bottom) of the back support structure has a second cross sectional area. However, Barone fails to specifically disclose the solar cell is photovoltaic cell, claimed dimensions of the Fresnel lens and support structure, located within a building façade, and the first cross section area is larger than the second cross section area.

In the same field of endeavor, Gorthala teaches a Fresnel lens assembly with 6inch square lenses (see col. 6, lines 1-10) for incorporation in a building façade to change thermal energy to electrical power (see col. 6, lines 11-67). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include Fresnel lens having the claimed area in a building facade since it is known in the art and provides proficient source for heating or lighting buildings. However Barone and Gorthala fail to specifically disclose the claimed support structure and cross sectional area.

In the same field of endeavor, Kaminar discloses wherein the back support structure comprises a back support structure which has a first cross sectional area (spreads larger at the top near lens) at a first portion adapted to be connected to the Fresnel lens and a second cross sectional area smaller than the first cross sectional area at a second portion adapted to support the photovoltaic cell (bottom portion of 18; 15, 16, 28; see figure 1 and 2). Thus, it would have been obvious to one of ordinary skill

in the art at the time the invention was made to modify the support structure of Barone and Gorthala, as taught by Kaminar, to provide an collector which supports a Fresnel lens and that is easily assembled without specialized tools.

Lastly, Barone, Gorthala and Kaminar fail to disclose the claimed support dimensions. It would have been an obvious matter of choice to design a Fresnel lens and support structure according the claimed dimensions, since such modification would have involved a mere change in size of the component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237(CCPA 1955).

Regarding claim 10 and 53,55,56, Barone, Gorthala and Kaminar discloses the module of claim 9, and Kaminar further disclose the photovoltaic cell (28) connected to the second portion (bottom portion of 18; 15,16) of the back support structure (see figure 2). Again, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the support structure of Barone and Gorthala, as taught by Kaminar, to provide an collector that is easily assembled without specialized tools. Regarding claim 11, Barone, Gorthala and Kaminar disclose the module of claim 10; however, Barone and Gorthala fail to specifically disclose wherein the back support structure comprises a substantially pyramidal or a substantially conical support structure comprising a translucent, a diffusing or a Fresnel diverging material.

Kaminar further discloses a substantially pyramidal structure comprising a diffusing material (see col. 3, lines 30-35 and figure 2). Thus, it would have still been obvious to one of ordinary skill in the art at the time the invention was made to modify

the support structure of Barone and Gorthala, as taught by Kaminar, to provide an collector that is easily assembled without specialized tools and collects a good amount solar radiation.

Regarding claim 12, Barone, Gorthala and Kaminar disclose the module of claim 11; however, Barone and Gorthala fail to specifically disclose wherein the back support structure comprises a diffusing material which is shaped to block the focused solar radiation from being visible from a back side of the back support structure, and wherein the back side of the back support structure faces away from the Fresnel lens.

Kaminar further discloses a substantially pyramidal back support structure comprising a diffusing material (see col. 3, lines 30-35 and figure 2) where the diffusing material is shaped to focus solar radiation and the sheets are metal. Thus, from the backside the solar radiation is not visible from the back support side. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the support structure of Barone and Gorthala, as taught by Kaminar, to provide a collector that receives a good concentration of solar energy and an collector that is easily assembled without specialized tools.

Regarding claims 13 and 54, Barone, Gorthala and Kaminar disclose the module of claim 10; however, Barone and Gorthala fails to specifically disclose wherein the back support structure comprises a substantially pyramidal or a substantially conical support structure comprising a translucent, a diffusing or a Fresnel diverging material.

Kaminar further discloses a substantially pyramidal structure comprising a diffusing material (see col. 3, lines 30-35 and figure 2). Thus, it would have still been

obvious to one of ordinary skill in the art at the time the invention was made to modify the support structure of Barone and Gorthala, as taught by Kaminar, to provide an collector that is easily assembled without specialized tools and collects a good amount solar radiation.

Barone further teaches the support can be a scaffling structure. A scuffling structure would be an equivalent to wires or rods support structure. Furthermore, as taught by Kaminar, a snap fit structure, helps when assembling the housing. Thus, it would have still been obvious to one of ordinary skill in the art at the time the invention was made to provide a snap fit configuration, since the collector support would be easily assembled.

Regarding claim 14, Barone, Gorthala and Kaminar further teaches the module of claim 10, where in Barone disclose the solar cell comprises a polygonal cell (3) which is mounted at a distance from the Fresnel lens (1) so that a size of an area of solar radiation focused by the Fresnel lens substantially matches a size of the photovoltaic cell radiation receiving area (see figure 3 of Barone).

Regarding claim 15, Barone, Gorthala and Kaminar discloses the claimed invention wherein Gorthala discloses the claimed Fresnel lens of 6 inches. However the fail to specifically disclose the module of claim 10, wherein the second area of the support structure comprises an area of 0.5 to 1.5 cm square or less, and a length of the support structure from the first area to the second area is 10 to 10 cm or less and the photovoltaic cell radiation receiving are is 1.5 cm square or less. It would have been an obvious matter of choice to design a Fresnel lens and support structure according the

claimed dimensions, since such modification would have involved a mere change in size of the component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237(CCPA 1955).

Regarding claim 16, Barone, Gorthala and Kaminar disclose the module of claim 10, Barone further comprises: a focusing lens array (2;see col. 4,lines 20-42; functional equivalent of single lens covering the area) located between the Fresnel lens (1) and the solar cell (3); However Barone fails to specifically disclose the solar cell is a photovoltaic cell and a heat sink connected to the second portion of the back support structure, such that the photovoltaic cell is mounted in contact with the heat sink.

Kaminar discloses a Fresnel lens (11) and photovoltaic cell with a heat sink (15) connected to the second portion of the back support (see col. 3, lines 45-65), such that the photovoltaic cell is mounted in contact with the heat sink. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the support structure of Barone and Gorthala, as taught by Kaminar, to provide a collector that receives a good concentration of solar energy and an collector that is easily assembled without specialized tools.

Regarding claim 17, Barone, Gorthala and Kaminar disclose the module of claim 16, Kaminar further disclose wherein: the heat sink is selected from a group consisting of radioactive type heat sinks (see col. 3), cooling fluid type heat sinks, passive cooling type heat sinks and heat- pipe type heat sinks. However, Barone, Gorthala and Kaminar fail to specifically disclose the photovoltaic cell (a semiconductor is selected from a group consisting of III-V semiconductor solar cells and vertical multi-junction (VMJ) solar

cells. Although, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a cell that multi-junction or semiconductor group II-V, since they are well known solar cells in the art (the Examiner takes official notice to this fact) and multi-junction cells, for example, can be highly efficient in converting sunlight into direct electricity.

Regarding claims 18-19, Barone, Gorthala and Kaminar disclose the module of claim 16, wherein Kaminar further discloses the Fresnel lens is interlocked or snap fitted to the first portion (top) of the back support structure; and the heat sink (see col. 3) is interlocked or snap fitted to the second portion (bottom portion of 18; 15,16) of the back support structure where photovoltaic cell (28) is attached to the heat sink (15). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the support structure of Barone and Gorthala, as taught by Kaminar, to provide a collector that receives a good concentration of solar energy and a collector that is easily assembled without specialized tools.

Regarding claim 20, Barone, Gorthala and Kaminar disclose the module of claim 10, Barone and Gorthala fails to specifically disclose further comprising at least one air gap between the Fresnel lens and the back support structure.

Kaminar illustrates in figure 5 how the lens and back support structure fit together. As illustrated there exist an air gap in the cavity 56, such that in the connection air gaps exist between the lens and hairpin terminal 53. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Barone and Gorthala, as taught by Kaminar, to provide a collector that receives a good

concentration of solar energy and an collector that is easily assembled without specialized tools.

Regarding claims 51-52, Barone fails to specifically disclose the percent of solar energy captured and transformed into electricity. Gorthala teaches that overall system efficiency of the solar concentrators is thirty percent. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include this feature in solar concentrator using Fresnel optics, since it is known in the art and the higher the conversion rate the more low cost energy to use in the system.

Response to Arguments

6. Applicant's arguments filed 6/8/05 have been fully considered but they are not persuasive. Applicant argues that Barone fails to specifically disclose a square focusing portion to focus to a square area. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a square (as the polygonal shape) since, Barone suggest the lens array and solar sell size may be optimized for cost and efficiency (see col. 3,lines 63-67 and col. 4,lines 1-10), the lens and cell may be arrays (see col. 4,lines 50-57) of optical elements, and the square shaped elements allow for close packing of the Fresnel lens in a building or on an support structure to allow for a more efficient detection and focusing area. In addition, In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions

would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

7. Applicant's arguments with respect to claims 3-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yoshino (US 6,037,535) discloses a sunlight collection apparatus.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Harrington whose telephone number is 571 272 2330. The examiner can normally be reached on Monday - Thursday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571 272 2328. The fax phone number for the organization where this application or proceeding is assigned is 571 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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